

EMF long-term measurements

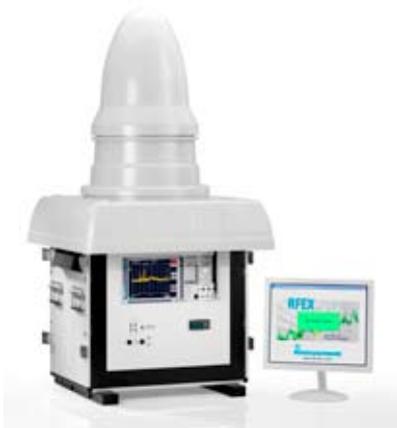
Automated long-term measurements expand snapshot measurements associated with risk communication

TEST & MEASUREMENT

Since EMF measurements provide the facts required for discussing the possible dangers of radio emissions with the public, they are an integral part of risk communication. Conventional on-site measurements only cover the situation at the moment. Signal weighting is also difficult because some radio signals are only transmitted for a short time and because advanced technologies make use of adaptive power and radiation pattern control. Such problems are solved by

automatically and continuously monitoring typical or critical measurement points, which yield conclusive results. This approach involves standard-compliant monitoring over the entire frequency range, where the individual electromagnetic emissions are allocated to exact frequencies. This solution allows the evaluation of both short-term and long-term fluctuations, e.g. due to new technologies, and provides reliable data for risk communication and research.

T & M solution



The R&S® EMF monitor is robust, reliable, and accurate. As an autonomous test station, it precisely and seamlessly detects electromagnetic emissions in the frequency range from 9 kHz to 3 GHz specified by many EMF standards. The wide dynamic range covers both strong and weak signals. The frequency-selective field strength measurement is not dependent on the angle of incidence and polarization, and covers everything from analog modulated signals up to digital, pulsed wide-band, or radar signals. Measurement and signal analysis are

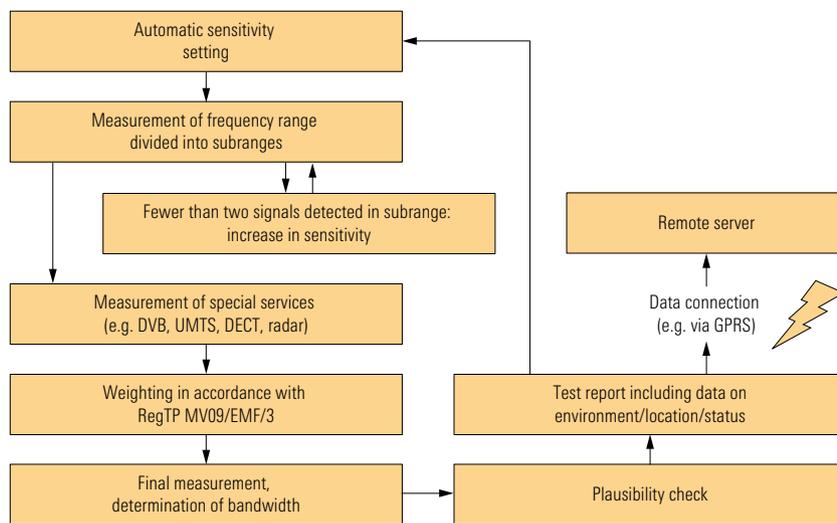


controlled by the tried-and-tested R&S® RFEX EMF measurement software. This software allows the exact detection, allocation, and evaluation of electromagnetic emissions in accordance with the applicable regulations (e.g. RegTP MV 09/EMF/3 in the case of the German monitoring network). At the same time, the measurement can be configured to other standards or specific measurement tasks by remote control. The measurement results are automatically transmitted to a server and – in Germany, for example – made available to the public via the Internet.

Application

By combining antennas decoupled from each other and from the ground (isotropic loop antenna in the lower frequency range and isotropic E-field antenna in the upper frequency range), site-specific calibration at the test site becomes unnecessary. The measurement is performed with the R&S®ESPI test receiver, which detects strong and weak signals at the same time owing to the combination of preselector and preamplifier. The measurement sequence is handled by special functions of the R&S®RFEX EMF measurement software, which is part of the tried-and-tested portable R&S®TS-EMF system for EMF measurements. Measurement and analysis consist of a series of steps that are repeated in cycles (see figure). After an automatic adjustment of sensi-

tivity in order to prevent overload, the entire frequency range is measured. Different settings can be selected for each frequency subrange. To help ensure that signals are detected in every subrange, the measurement can be repeated with higher sensitivity, if required. Special predefined radio services with suitable bandwidth and specific settings are then measured to also weight these complex signals correctly. After evaluation and data reduction, the plausibility of the signal is checked by means of the bandwidth. The measurement results are transmitted together with the environment and system status data. Intermediate steps and raw data that may be required for subsequent detailed analysis can be stored locally.



Technical information

Product designation	R&S®EMF monitor
Based on	R&S®TS-EMF
Frequency range	9 kHz to 3 GHz
Field measurement	isotropic; H field (9 kHz to 200 MHz) and E field (30 MHz to 3 GHz)
Switchover	solid-state switch (fast, long service life)
Sensitivity	<5 mV/m
Dynamic range	wide dynamic range due to preselector and switchable preamplifier in receiver
Transport	can be carried by two people; radome with antennas can be removed



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